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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,870	03/14/2001	Tokuro Kubo	FUJO 18.429	3399

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EXAMINER	
HA, DAC V	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/805,870	KUBO ET AL.	
	Examiner	Art Unit	
	Dac V. Ha	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12* is/are allowed.

6)☒ Claim(s) *1-11, 13-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed on 08/12/04.

In compliance with the office action dated 05/12/04, claim 12 has been re-written, claims 3, 4 have been amended to overcome the § 112 rejection. New claim 17 has been added and claims 3-16 have been amended to depend from claim 17, directly or indirectly.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-4, 8, 9, 13, 17** are rejected under 35 U.S.C. 102(e) as being anticipated by Wessel et al. (US 6,275,685) (hereinafter Wessel.

Regarding claim 1, Wessel teaches the claimed subject matter as follows.

"(a) opening the feedback loop" (Figure 6, elements 713, 743; Col. 8, lines 9-16);

"(b) adjusting both a level and a phase of an analog signal of the communications apparatus" (Figure 4, elements 16, 18; Col. 6, lines 47-50; Col. 8, lines 17-21);

"(c) closing the feedback loop" (Figure 5, element 60; Figure 6, elements 84, 722, 734, 726, 716, 727, 728, 713, 82, 750, 752, 754, 756, 757, 746, 758, 743; Col. 8, line 34 to Col. 9, line 25);

"(d) generating/updating the distortion compensation coefficients" (Col. 8, line 34 to Col. 9, line 25; Col. 9, line 61 to col. 11, line 40).

Regarding claim 2, Wessel further teach the followings.

"(e) activating a digital section of said communications apparatus prior to step (a)" (Figure 6, elements 704, 706, 710);

"(f) activating an analog section of said communications apparatus between steps (a) and (b)" (Figures , 4, 5, element 60).

Regarding claim 3, Wessel further teaches the claimed subject matter "wherein said step of adjusting the level of an analog signal offsets a gain of an amplifier for amplifying a signal in order to transmit radio waves of said communications apparatus" in Col. 6, lines 51-56.

Regarding claim 4, Wessel further teaches the claimed subject matter "wherein said step of adjusting the phase of an analog signal adjusts an analog signal delay that is caused in the analog section of said communications apparatus and matches in timing a signal transmitted via a feedback loop with a signal directly inputted to said non-linear distortion compensation device" in Col. 1, lines 60-62; Col. 3, lines 4-11; Col. 6, line 51 to Col. 7, line 12.

Regarding claim 8, Wessel further teaches the claimed subject matter "wherein said communications apparatus is composed of a plurality of transmitting systems,

forms a feedback loop by sequentially switching the plurality of transmitting systems and generates/updates the distortion compensation coefficient" in Figures 4-6; Col. 6, line 35 to Col. 11, line 40.

Regarding claim 9, Wessel further teaches the claimed subject matter "wherein a plurality of generation/update steps of the distortion compensation coefficient can be set" in Figures 4-6; Col. 6, line 35 to Col. 11, line 40.

Regarding claim 13, Wessel further teaches the claimed subject matter "wherein convergence of a generation/update process of the distortion compensation coefficient is judged by detecting size of a difference signal between a signal directly inputted to said non-linear distortion compensation device and a signal which is transmitted via said feedback loop and the level of which is adjusted" in Figures 4-6.

Regarding claim 17, see claim 2 above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 6, 10, 14, 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wessel.

Regarding claim 6, the claimed subject matter "wherein step (b) is performed using a central frequency of a band occupied by the plurality of carriers as a whole" would have been obvious to one skilled in the art since .

Regarding claim 10, the claimed subject matter "wherein the generation/update step of the distortion compensation coefficient is set to a minimum and a level of a signal to be used to generate/update the distortion compensation coefficient is changed in multi-steps from the minimum value and the distortion compensation coefficient is generated/updated by gradually increasing the level" would have been obviously optional to one skilled in the art since Wessel suggest many algorithm could be utilized to generate the compensation parameter (col. 10, line 4).

Regarding claim 14, the claimed subject matter "wherein convergence of a generation/update process of the distortion compensation coefficient is judged by detecting an out-of-band radiation level of a signal immediately before being transmitted from said transmitting unit" would have been obvious to one skilled in the art since removing the unwanted out-of-band is desire for such communication system.

Regarding claim 16, the claimed subject matter "wherein a transmitting side of said communications apparatus comprises an antenna and a signal termination unit with the same impedance as that of the antenna, and generates/updates the distortion compensation coefficient while terminating a signal used to generate/update the distortion compensation coefficient at the signal termination unit" would have been obvious to one skilled in the art as optional.

6. **Claims 5, 7, 11, 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wessel in view of Wright et al. (US 6,697,436) (hereinafter Wright).

Regarding claim 5, Wessel teaches all the claimed subject matter in claim 5, as stated above, except for the claimed subject matter "(g) adjusting both amplitude and phase of a signal for each carrier". Wessel teaches the compensation method utilized in a multi-carrier environment (Abstract). Wright also teaches method for distortion compensation for multi-carrier environment, in which, each carrier is adjusted individually (Col. 55, line 64 to Col. 56, line 21). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust each carrier (of Wessel) individually as taught by Wright as a desire of system application.

Regarding claim 7, Wessel teaches all the claimed subject matter in claim 5, as stated above, except for the claimed subject matter "said generation/update of a distortion compensation coefficient is made using a test signal". However, this claimed subject matter would have been optional to one skilled in the art. For example, Wright teaches the compensation method including training and calibration for generating compensation coefficients (Figure 9).

Regarding claim 11, Wright further teaches the claimed subject matter "wherein a value measured in advance is used as an initial value for said generation/update of a distortion compensation coefficient" in 9, lines 20-22 as optional.

Regarding claim 15, Wright further suggests the claimed subject matter "wherein if said non-linear distortion compensation device is switched off and is switched on again, a value immediately before said non-linear distortion compensation

device is switched off is used ms an initial value for said level adjustment and phase adjustment processes in step (b)" in Col. 8, line 66 to Col. 10, line 67; Figure 9.

Allowable Subject Matter

7. **Claim 12** is allowed.

Response to Arguments

8. Applicant's arguments filed on 08/12/04 have been fully considered but they are not persuasive.

Pages 8-9 of the REMARKS filed on 08/12/04, applicants have argued "In sharp contrast, Applicants claimed invention is directed to a method for activating a communications apparatus that includes a non-linear distortion compensation device for generating a distortion compensation coefficient. While the gain and phase adjustments taught by Wessel directly compensate a distortion, the gain and phase adjustments taught by Applicants' claimed method instead represent initial adjustments to the phase and gain of a signal in a loop, prior to the generations of a distortion compensation coefficient. Accordingly, Applicants respectfully submit that independent claims 1 and 17 are neither anticipated nor made obvious by Wessel, and are therefore in condition for allowance. As claims 2 - 1 I and 1 3 - 16 each depend from one of allowable claims 1 and 17, Applicants respectfully submit that claims 2 - 11 and 13 - 16 are also allowable for at least this reason."

It is, however, noticed that "the gain and phase adjustments" taught by Wessel do not directly compensate a distortion. Rather, in Wessel, a look-up table (LUT) is

utilized for determining the gain and phase correction coefficients. Particularly, the gain and phase correction coefficients can be selected correctly at the beginning (col. 10, lines 10-12). These gain and phase correction coefficients are then converted to analog domain whereby the sub-circuit can produce continuous-time correction signals (col. 3, lines 62-67). Further, the gain and phase correction coefficients are adaptively selected from the LUT in a manner utilizing the gain error signal and phase error signal (Fig. 6; col. 8, line 34 to col. 9, line 61; col. 10, lines 38-63). Thus, the rejection of independent claims 1 and 17 are deemed to be appropriate, and likewise for all dependent claims 2-16, which depend therefrom.

Conclusion

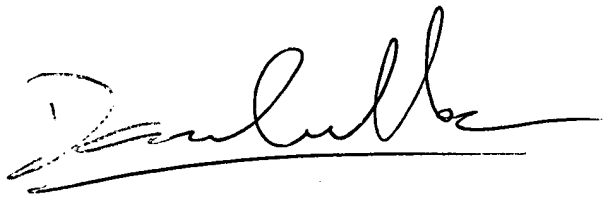
9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dac V. Ha whose telephone number is 571-273-3040. The examiner can normally be reached on 5/4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dac V. Ha
Examiner
Art Unit 2634